ABSTRACT OF THE DISCLSORURE

When sapphire is epitaxially grown on a seed substrate of Si at a growth temperature of about 350°C by an ionized cluster beam vapor deposition and epitaxy method, a γ phase Al_2O_3 layer is formed. When the γ phase Al_2O_3 layer is exposed to a high temperature of not lower than 1000°C, the γ phase Al_2O_3 layer then changes to an α phase Al_2O_3 layer by phase transition. A known or optional semiconductor light-emitting element can be formed on the α phase sapphire. When the seed substrate of Si is then selectively removed by etching, a semiconductor light-emitting element having a light-extracting surface of the sapphire processed into a desired shape can be obtained. As a result, external quantum efficiency of the semiconductor light-emitting element can be improved as well as light-condensing characteristic and directivity of light output from the semiconductor light-emitting element can be improved.